McFarland, et al. or Langer. Additionally, the Examiner rejected claims 8 and 9 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Smith. Further, the Examiner rejected claims 10 and 11 under 35 U.S.C. § 103(a) as being obvious over Smith as applied to claim 8 and further in view of Berger.

The Section 103(a) Claims Rejections:

The Examiner rejected claims 1, 5-7, 20 and 21 under 35 U.S.C. § 103(a) as obvious over Smith in view of either Marpel or Dewhurst. Independent claim 1 requires "an inlet opening having an outer venturi section and an inner laminar section such that air entering the sampler impacts said adhesive media." In accordance with the operation of the Applicants' claimed invention, the air in the outer venturi section is accelerated and then passed to an inner laminar section that directs the air such that all the air impacts the adhesive media in a perpendicular direction. The venturi section accelerates the air to ensure that it strikes and does not pass around the microscopic slide.

Conversely, Smith teaches a device having an inlet opening with a passage 23 that only converges toward the slide 36. The disclosed passage 23 has two opposing walls that converge toward one another from the inlet to the slide. In this fashion, the air entering the inlet opening will accelerate, but will not impact the microscopic slide in a perpendicular fashion. Instead, as will be readily understood by one of skill in the art, much of the air will impact the slide at an angle which can adversely impact the trace results collected on the microscopic slide 36. It is submitted that the Examiner's reading of Smith is incorrect in that all of the air exiting the passage will not strike the slide 36 in a perpendicular direction. On the other hand, Applicants' claimed laminar section allows for all of the air to strike the slide in a perpendicular direction. As Smith does not provide both a section for accelerating the air and a separate section for

directing all the air in a perpendicular direction, it does not embody every element of claim 1.

Moreover, neither the Marpel nor Dewhurst references disclose or suggest a configuration that would arrive at Applicants' claimed invention. Contrary to the Examiner's statements in the Office Action, Marpel does not teach the use of a nozzle with both a venturi section and a laminar section. Marpel only teaches a device having an orifice 20 formed therein that has a chamfered or rounded periphery as is well known in the art with nozzles. The specification does not mention anything about the configuration of the nozzle and it is clear from the figures that the chamfered periphery is relatively insignificant in size and does not provide any appreciable acceleration of the air. The acceleration of air is desirable to provide consistent trace results. However, in view of the relatively small size of the orifice or nozzle 20 disclosed in Marpel, the chamfer is intended to provide a slightly larger area for air to enter the rounded orifice and will not cause the air to accelerate. Further, the rounded orifice configuration also teaches away from the claimed slit impaction sampler which provides narrow elongated traces on the microscopic slide. The benefits of slip impaction are highly desirable and are required by claim 1 of Applicants' invention.

Similarly, Dewhurst does not teach a slit impaction sampler which provides trace line impaction, but instead will teaches trace circular impaction. Moreover, Dewhurst also teaches away from Applicants' claimed invention by providing an extremely large inlet opening. The inlet opening comprises substantially the entire top surface of the device. Moreover, the inlet opening does not provide for slit impaction. Thus, there is no motivation or suggestion to combine Dewhurst with Smith to arrive at Applicants' claimed invention. To do so, as the Examiner suggests, constitutes impermissible hindsight reconstruction.

It is submitted that claims 2-7, which depend from claim 1, are allowable for the same reasons.

Applicants' invention of claim 20 requires a passageway in communication with an inlet opening to convey air entering the sampler to the slide. The inlet opens to a passageway having a venturi section located immediately adjacent the inlet and a laminar section located adjacent the venturi section.

Such a configuration is not taught by either Smith or Dewhurst. As discussed above, the Smith reference at best only teaches a venturi section for accelerating air; it does not teach any laminar section and therefore does not teach or suggest the benefits provided by such a configuration. Moreover, the Dewhurst reference teaches an inlet that is not formed in close proximity to the slide. Further, the inlet is relatively large and has a circular section adjacent the input end to increase inlet efficiency "by significantly reducing turbulence in and around the vicinity of the inlet." (col. 4, lines 65-68.) Therefore, Dewhurst specifically teaches away from Applicants' claimed invention of immediately accelerating the air once it enters the inlet. Instead, Dewhurst is concerned with providing a large enough opening to draw in air.

Accordingly, it is submitted that none of the references of record teach or suggest Applicants' invention of claim 20. Moreover, it is submitted that claim 21, which depends from claim 20, is allowable for the same reasons.

The Section 102(b) Rejections:

The Examiner has rejected claims 8 and 9 under a 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Smith. Claim 8 requires that air, after it is accelerated, be directed such that it impacts the adhesive media in a perpendicular direction. Claim 8 also requires that the inlet opening be relatively small so as to adequately control the egress of air and thus the impaction traces. As discussed above, Smith does not teach directing all of the air to strike the slide in a perpendicular direction which effects the quality and uniformity of the impaction traces. Thus, Smith does not disclose

every limitation of claim 8. Moreover, none of the other references suggest the combination of claim 8 for the reasons and differences discussed above. The other references either fail to teach a venturi and laminar section or a relatively small inlet opening with such a combination.

It is submitted that claims 9-11, which depend from claim 8, are allowable for the same reasons provided above.

It is also submitted that newly added claims 20 and 22 also provide for similarly configured sampler devices and are thus allowable for similar reasons to those provided above.

CONCLUSION

It is therefore submitted that all pending claims are now in a condition for allowance. A Notice of Allowance is therefore respectfully solicited.

If the Examiner should have any questions, he is urged to contact the undersigned at 248-223-9500.

Respectfully submitted,

John S. Artz
Reg. No. 36,431
Attorney for Applicant(s)

Date: January 25, 2002

Artz & Artz, P.C.
28333 Telegraph Road, Ste. 250
Southfield, MI 48034
(248) 223-9500
(248) 223-9522 (fax)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Kindly insert the following after the title:

> The present application claims priority from co-pending U.S. Application Serial No. 09/705,602, filed November 3, 2000, and entitled "BIOAEROSOL SLIT IMPACTION SAMPLING DEVICE."

Kindly substitute the following for the second full paragraph on page 8:

The device 10 includes a space [80] 86 formed between the bottom surface 46 of the top cap 12 and the top of the adhesive media 20. The space 86 generates flow through the sampler and sets up the impaction force of the contaminants. The size of the space 86 is selected to prevent smaller particles from exiting on the sides 94, 96 without striking the adhesive media 20. The height of the space 86 is determined by the depth of the recess 40 in the base 14. As air passes through this space 86, momentum and particle inertia cause the airborne contaminants to impact on the adhesive media 20. Thereafter, the air flows around the microscope slide 16, as generally indicated by the arrows designated 88. The air flow then enters an exist passage 90 before flowing into a vacuum line 92 and through the outlet 74 to the vacuum source 78. The exit passage 90 is located in the center of the circular depression 42 and is cross drilled to the vacuum line 92.

In the Claims:

Kindly substitute the following for pending claim 2:

2. (Amended) The sampler of claim 1, wherein said inlet opening has a pair of generally straight opposing side portions and a pair or arcuate end portions.

Kindly substitute the following for pending claim 8:

8. (Amended) A method of gathering airborne particles in a slit impaction sampler, comprising:

providing a microscope slide;

preparing said microscope slide with an adhesive media;

loading said slide into a base portion of the sampler;

assembling a top portion of the sampler to said base portion;

connecting a vacuum source to an outlet opening of the sampler;

drawing air into an inlet opening formed in said top portion of the sampler, said inlet opening being substantially smaller than an upper surface of said top portion.;

accelerating air after it enters said inlet opening; and

directing the air such that it impacts said adhesive media in a [generally] perpendicular direction.

Kindly cancel claims 12-19 without prejudice.

Kindly add the following additional claims:

20 (New) An airborne particle impaction sampler comprising:

a housing;

a slide disposed within said housing;

a coating disposed on said slide to assist in adhering airborne particles on said slide;

a inlet formed in said housing in proximity to said slide;

a passageway in communication with said inlet to convey air entering the sampler to said slide, said passageway having an venturi section located adjacent said inlet and a laminar section.

21. (New) The sampler of claim 20, wherein said laminar section is located adjacent said venturi section.

22. (New) A method of gathering airborne particles into an impaction sampler comprising:

providing a housing;

locating a microscope slide in said housing, said microscope slide having an adhesive media applied thereon;

drawing air through a small opening formed in said housing and into a passage located adjacent said microscope slide;

accelerating said drawn air in first portion of said passage after it has passed through said opening;

passing said accelerated air from said first portion to a second portion, said second portion having a smaller diameter than said first portion.

23. (New) The method of claim 22 wherein said step of drawing air further comprises connecting a vacuum source to an outlet opening of the sampler.

24. (New) The method of claim 22, wherein said opening is configured in the shape of a slit.

25. (New) The method of said passage of claim 22 wherein said first portion is a venturi portion and said second portion of said passage is a laminar portion.

26. (New) The method of claim 22, further comprising:

directing the air such that it impacts said adhesive media in a substantially perpendicular direction.